DISPLAY DEVICE ARBITRARILY ATTACHABLE TO AND DETACHABLE FROM OTHER DISPLAY DEVICES

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to display devices for displaying data. In particular, the invention relates to display devices which can be attached to and detached from each other.

2. Description of the Background Art

Japanese Utility Model Publication No. 6-20189 discloses a folding type electronic book of interest to the present invention. According to this publication, a plurality of display devices are coupled by elastic members placed therebetween.

Japanese Patent Laying-Open No. 4-355786 discloses a display system having a plurality of display devices which are stacked on each other and bound together along one side. In this system, display can be continued even if any display device is detached.

Further, there is a conventional system of communicating data and control instructions between a plurality of terminals. In one conventional system, for example, WWW (World Wide Web) browsers are operating on two computers respectively, with one WWW browser transmitting a URL (Uniform Resource Locator) to the other WWW browser through a TCP/IP (Transmission Control Protocol/Internet Protocol) and the other WWW browser receiving and displaying the URL.

Disadvantageously, the display devices disclosed in Japanese Utility Model Publication No. 6-20189 are coupled by the elastic members provided therebetween, and accordingly it is difficult to hold the coupled devices in the air in a stable manner. In addition, the publication just shows the physical structure of the folding type electronic book and communication between the coupled devices is impossible according to this.

According to Japanese Patent Laying-Open No. 4-355786, the display devices disclosed therein are detachable while the displayed contents cannot be adjusted between those display devices so that update of the displayed contents to new data is impossible, for example.

The system of communicating URLs between WWW browsers and displaying them usually operates between computers connected by a network cable. Therefore, if this system is applied to a small size display device such as an electronic book for portable use, this system would have disadvantages like those of Japanese Utility Model Publication No. 6-20189.

SUMMARY OF THE INVENTION

One object of the present invention is to provide a display device which can operate independently, while a consistent display is possible even if a plurality of display devices of such type of display device are connected to or separated from each other for use.

Another object of the present invention is to provide a display device capable of displaying successive pages in order even if the number of display devices connected thereto varies.

Still another object of the present invention is to provide display devices easily connected to each other.

A further object of the present invention is to provide display devices which can be connected to each other in which there are fewer restrictions on the location of installation.

Those objects would be achieved by a display device including following components. Specifically, the display device includes a data acquiring unit for acquiring data, a display unit for displaying data obtained by the data acquiring unit, an operation unit for operating the display device, a controller for controlling the display device, a communication unit for communicating with another display device, and a coupling unit for structurally coupling the display device to the another display device with which communication is made by the communication unit.

According to the present invention, the coupling unit effectively enables a plurality of coupled display devices as a whole to be held stably in the air. Particularly in the application of display devices to an electronic book formed of two display devices to be opened for use, if the two display devices coupled to communicate with each other are not coupled stably, the electronic book thus formed cannot be held with one hand as the normal books, which is highly inconvenient for use. Therefore, depending on the applied field, it is extremely advantageous to couple display devices which communicate with each other.

The display devices coupled to each other are adapted to display respective pages which are successive in order. Even if the number of coupled display devices is dynamically changed, there would be no missing page or the pages would not be displayed in reverse order and the pages can thus be displayed consecutively.

The display device can acquire data from another display device coupled thereto. Therefore, the display device can obtain only the necessary data from the coupled display device and thus those display devices can advantageously share data. For example, if the display devices are applied to the electronic book, it is useless to store the same data in respective display devices. Although purchase of data for each device is necessary if the data is sales data, the data to be purchased may be just one if the data is shared and just a required data is transmitted. It could be possible to copy all data in one device into other display devices in advance. However, transmission of data which will not be displayed is useless. By transmitting just necessary data, the amount of communicated data would effectively be reduced.

According to the present invention, the coupling unit and the communication unit may be integrated. In this way, the user can readily connect the devices. Further, reduction of the number of components is possible to achieve advantages concerning the cost and maintenance.

Preferably, radio or optical communication is performed by the communication unit.

Since communication can be made between display devices by the radio communication, the radio waves can be transmitted through a thin plate, for example, and accordingly there are fewer restrictions on the location of installation and the communication unit can be installed within the display device. In addition, the use of the radio communication can eliminate defective contact which occurs when physical connection is employed such as cable.

Since communication can be made between display devices by optical communication, higher directivity than that of the radio communication using low frequencies hinders leakage of communication contents.

Preferably, communication units are located on both sides of the display device.